REMARKS

In the Office Action dated November 30, 2004, claims 18-22 were examined with the result that all claims were rejected. The Examiner made the rejection final. In response, Applicant has filed a Request for Continuing Examination, submits the following remarks, and a Declaration by Hector F. DeLuca, one of the named inventors. In view of that Declaration and the following comments, reconsideration of this application is requested.

In the Office Action, claims 18-22 were rejected under 35 USC §103(a) as being unpatentable over DeLuca et al U.S. 5,843,928. Basically, it is the Examiner's position that DeLuca et al '928 teaches a genus of vitamin D compounds which includes the presently claimed 2-methylene-19-nor-20(S)-1α,25-dihydroxyvitamin D_3 (2MD), and since it is known that vitamin D compounds are useful to treat various cancers, it would be obvious to employ any of the vitamin D compounds disclosed in the DeLuca et al '928 patent in a method of treating leukemia, colon cancer, breast cancer and prostate cancer. Applicant, however, respectfully disagrees for the following reasons.

The Examiner concludes in the Office Action that one skilled in the art would be motivated to employ "any" of the vitamin D compounds of DeLuca et al '928 to treat leukemia, colon cancer, breast cancer and prostate cancer. The Examiner dismisses the previous Plum et al article submitted by Applicant as being nonprobative evidence of nonobviousness because it was published after the effective filing date of the present patent application. Applicant disagrees with the Examiner since Applicant only employed the HL-60 cell differentiation data reported in the Plum et al article and such data are inherent activities of the compounds reported (all three of which were covered by the genus taught in the '928 patent which was filed prior to the filing of the present patent application). As such the data would be relevant to the unobviousness of the presently claimed use for 2MD whether or not the Plum et al article was published before or after the filing date of the present patent application. The Plum et al article provided facts that are in issue in the present case and such facts should be considered by the Examiner.

Nevertheless, in order to expedite prosecution, Applicant has filed herewith a Declaration of Hector F. DeLuca, one of the named inventors, which analyzes and reports on the cell differentiation data for the three vitamin D compounds reported in the Plum et al article as compared to the instantly claimed 2MD. The Examiner should note that the DeLuca Declaration filed herewith is not signed. A completely executed Declaration will be forwarded shortly in a Supplemental Amendment.

The DeLuca Declaration discusses the HL-60 cell differentiation activity for three vitamin D analogs and compares them to the natural hormone, i.e. 1α,25-dihydroxyvitamin D_3. These analogs include 2-methylene-19-nor-1α-hydroxyhomopregnacalciferol (2MP), 2-methylene-19-nor-20(S), 1α-hydroxy-bishomopregnacalciferol (2MbisP), and 2-methylene-19-nor-1α-hydroxypregnacalciferol (2Mpregna). The Examiner should note that all three of these compounds are covered by the generic formula set forth in the DeLuca et al '928 patent cited by the Examiner to reject present claims 18-22. More specifically, the 2Mpregna compound is covered by the generic structure when R_6 and R_8 are both hydrogen, Z is Y and Y is hydrogen. The analog 2MP is covered by the generic structure in the '928 patent when R_6 and R_8 are both hydrogen, Z is Y and Y is methyl. Finally, the analog 2MbisP is covered by the generic formula in the '928 patent when R_6 and R_8 are both hydrogen, Z is Y and Y is the illustrated radical when R_1, R_2, R_3, R_4 and R_5 are all hydrogen and m and n are both 0. Thus, in accordance with the Examiner's position, one skilled in the art would be motivated to employ any or all of these three vitamin D analogs in a method of treating leukemia, colon cancer, breast cancer and prostate cancer.

Referring to the DeLuca Declaration, however, and specifically the data in Table 1 attached thereto, the Examiner can see a comparison of the HL-60 cell differentiation activity for these three compounds as compared with the native vitamin D hormone. The activity of all three compounds in HL-60 cell differentiation is clearly less than the native vitamin D hormone as evidenced by the fact that each of the three analogs requires a higher concentration than 1α,25-dihydroxyvitamin D_3 in order to obtain the same results

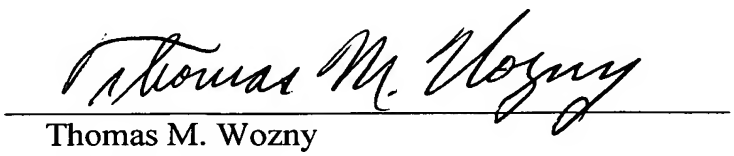
as 1α,25-dihydroxyvitamin D_3 (the EC_{50} value). All three of these compounds are less active than 1α,25-dihydroxyvitamin D_3 in HL-60 cell differentiation activity, and thus they would be unlikely to be selected for treating diseases such as leukemia, colon cancer, breast cancer and/or prostate cancer. As a result, the Examiner cannot conclude that "any" vitamin D analog disclosed in the '928 patent would be selected by one skilled in the art to treat such cancers. One skilled in the art would readily recognize from the data in the DeLuca Declaration that the cell differentiation activity of these three compounds is relatively low, and would look to other candidate compounds that would have cell differentiation activity greater than 1α,25-dihydroxyvitamin D_3.

In this regard, the Examiner should note the data set forth in Figure 5 of the present patent application and the description thereof contained at page 9, lines 5-8 and page 10, line 6-13. These data show that 2MD is 10-100 times more active than 1α,25-dihydroxyvitamin D_3 in causing HL-60 cell differentiation. Thus, based on these data, one skilled in the art would more likely choose 2MD over any of the above three analogs to treat leukemia, colon cancer, breast cancer and prostate cancer.

An effort has been made to place this application in condition for allowance and such action is earnestly requested.

Respectfully submitted,

ANDRUS, SCEALES, STARKE & SAWALL, LLP

By 

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